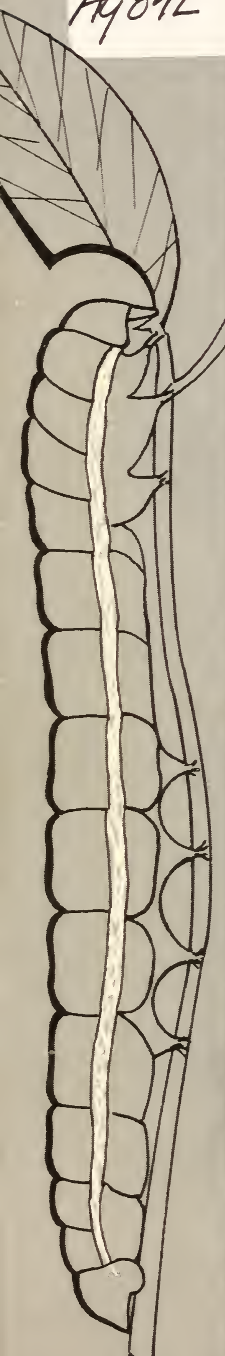
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

I.
Ag84L



Control of the ALFALFA CATERPILLAR

Leaflet No. 325
U.S. DEPARTMENT OF AGRICULTURE

Control of the ALFALFA CATERPILLAR

The alfalfa caterpillar [1] is a pest of alfalfa grown for hay in the Southwest. In some years it does little damage except in small areas or individual fields. Occasionally, however, it occurs in widespread outbreaks and causes serious losses. This insect may also be present in alfalfa grown for seed or pasture, and it occurs in other parts of the country, but in either case it is seldom very injurious.

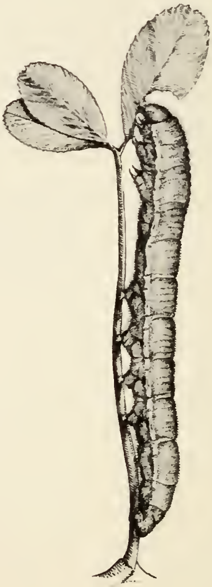
DESCRIPTION AND DEVELOPMENT

The alfalfa caterpillar is the larva of a small butterfly. This insect develops in four stages—egg, larva (or caterpillar), pupa, and adult (or butterfly).

The butterfly is yellow and has a black border on the wings. The female is distinguished from the male by yellow spots in this border. The butterflies appear in spring—as early as February in southern Arizona, and in April in the San Joaquin Valley of California.

The female butterflies lay their eggs singly on the upper surfaces of leaves. The eggs are white at first, and become reddish brown before they hatch. A female may lay as many as 500 eggs in her brief life of about 2 weeks.

After 3 to 7 days, the eggs hatch into small caterpillars. The newly hatched caterpillars feed on the leaves of the alfalfa plant and take on a green color. Full-grown caterpillars are dark, grass green and have a white stripe along each side of the body; they are about 1½ inches long. It is difficult to see

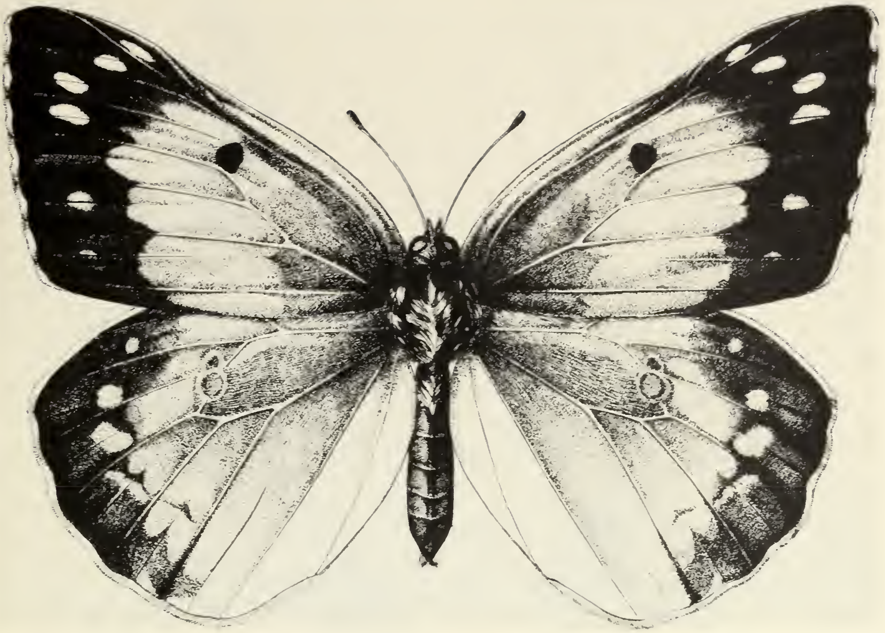


BN-17495-X

Alfalfa caterpillar. Enlarged.

---

[1] *Colias eurytheme.*



BN-17492-X

Female butterfly of the alfalfa caterpillar. Greatly enlarged.

them when they are stretched out along an alfalfa stem.

DAMAGE

Alfalfa caterpillars damage alfalfa primarily by feeding on the leaves of the plants. At first, the feeding gives the leaves a "shot-holed" appearance. In time, the caterpillars may strip the leaves and sometimes consume the stems.

In warm weather, the caterpillars complete development in 12 to 15 days. Then they attach themselves, head end up, to alfalfa stems and change to pale-green pupae suspended to the stems by silken threads. In this position, the pupae transform to butterflies and start a new generation. In the Southwest, all stages of the pest are often present in the field throughout winter.

The time required for the life cycle varies with the temperature. In southern Arizona it ranges from about 26 days in summer to about 65 days in early spring, and there are 6 or 7 generations a year. Farther north, the insect develops more slowly and fewer generations occur annually.

CONTROL

You may control the alfalfa caterpillar by following prescribed harvesting practices and, if necessary, by applying an insecticide. You may be aided by natural enemies that often keep this insect at a point of control where the use of insecticide is not required.

JUN 27 1963

LIBRARY
COASTAL PLAIN EXPERIMENT STATION
TIFTON, GEORGIA

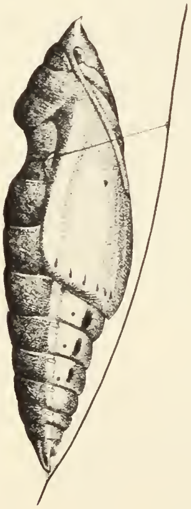
Harvesting Practices

If your crop is threatened by alfalfa caterpillars, you can help protect it by following these harvesting practices:

Cut early.—If you see large numbers of full-grown caterpillars, cut the alfalfa before it becomes severely damaged; this may save the present crop and later ones. Arrange with other growers in your locality to harvest at about the same time; this will prevent egg-laying butterflies from concentrating on a few fields or on a small acreage of alfalfa.

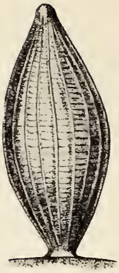
Cut close and clean.—By cutting alfalfa close to the ground and clean, you will remove food and shelter for the caterpillars and butterflies.

Irrigate heavily.—If possible, flood the closely mowed field after you have removed the hay. In the Southwest, this flooding together with the heat of the midday sun will kill most of the caterpillars that are left on the bare soil or short stubble.



BN-17494-X

Pupa of the alfalfa caterpillar. Enlarged.



BN-17493-X

Egg of the alfalfa caterpillar. Greatly enlarged.

Natural Enemies

Several natural enemies of the alfalfa caterpillar help you to protect your crop, although you seldom see them.

A virus disease, or wilt, is perhaps your best ally. It attacks both larvae and pupae, and is present in the top soil, stubble, and surface trash probably wherever alfalfa is grown in this country. Caterpillars killed by this disease hang from the plants in decayed masses. If 15 percent of the caterpillars on your alfalfa are killed by this disease by the time the plants are about one-third grown, you may not need to use insecticides.

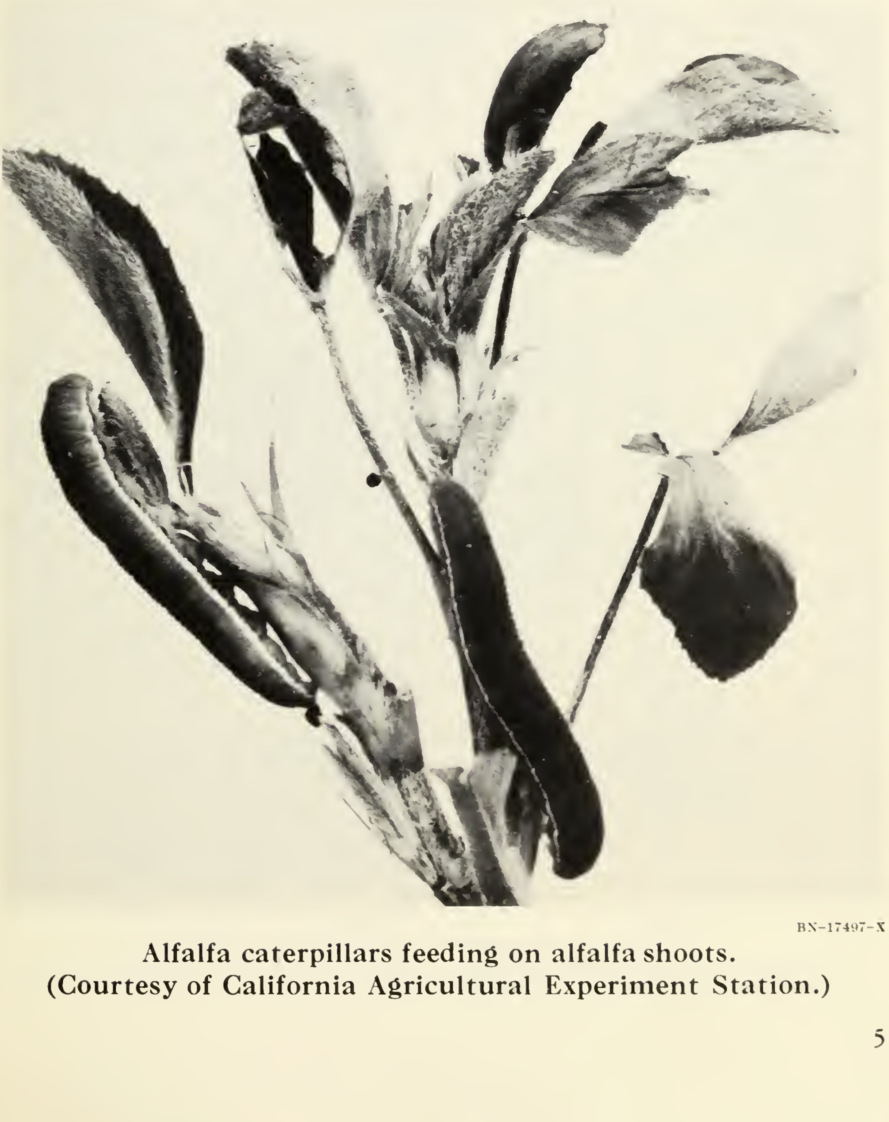
Insect parasites also help control the alfalfa caterpillar. One of the most effective of these is a small wasp known to scientists as *Apanteles medicaginis.* In the hot, interior valleys of California it protects a large part of the alfalfa from serious caterpillar damage. You may often see the bright-yellow or white cocoons of this parasite on the leaves. The adults that emerge from the cocoons lay eggs in the young caterpillars, and the larvae hatching from these eggs feed inside the caterpillars and destroy them. This parasite is most efficient in the summer in controlling infestations on the fourth and fifth crops.

Another parasite is a fly called *Phorocera claripennis*, which lays its eggs in the half-grown alfalfa caterpillars and kills them in much the same way as does the wasp.

Several insects kill alfalfa caterpillars by preying on them. Among these are the bollworm (also known as the corn earworm and the tomato fruitworm) and a lady beetle.

Control With Insecticide

You may need to supplement the recommended harvesting practices


BN-17497-X

Alfalfa caterpillars feeding on alfalfa shoots. (Courtesy of California Agricultural Experiment Station.)

by applying an insecticide. First, determine whether this is necessary.

Determining need for insecticide.—Look for the small, yellow butterflies as soon as your alfalfa is a few inches high. If you see many of them flitting from plant to plant, look for eggs. If, standing in one spot, you can see as many as five eggs on the plants, you will know that egg laying is heavy. After the eggs hatch (usually when the alfalfa is about one-third grown) sweep the plants with a standard insect net at various points throughout the field. If you catch 10 or more normal caterpillars per sweep in an average stand, apply insecticide promptly to prevent damage to the leaves and terminal buds. If most of the caterpillars you catch are parasitized, insecticide probably will not be needed. You can distinguish caterpillars containing parasites by their distorted shape.

BN-17498-X

Alfalfa caterpillar killed by wilt desease.
(Courtesy of California Agricultural Experiment Station.)

Applying insecticide.—Spray with Dylox, methoxychlor, or Phosdrin. Apply the following amount of active ingredient to each acre: Dylox, 4 to 5 ounces; methoxychlor, ¾ to 1 pound; or Phosdrin, 2 ounces. Use the higher dosages in hot, desert areas. Apply with either a ground sprayer or aircraft.

Results of research by the California Agricultural Experiment Station show that airplane application of a spray containing spores of *Bacillus thuringiensis* Berliner will give satisfactory control of the alfalfa caterpillar. To prepare the spray, obtain a wettable powder containing 25 billion to 75 billion spores per gram. Mix 6 ounces of the powder in each 5 to 10 gallons of water, and apply this quantity to each acre.

PRECAUTIONS

Insecticides are poisonous to man and to animals. Use them only when needed and handle them with care. Follow the directions and heed all precautions on container labels. Keep insecticides in closed,

BN-17496-X

***Apanteles medicaginis*, an important parasite of the alfalfa caterpillar. Enlarged.**

well-labeled containers in a dry place where they will not contaminate food or feed and where children or pets cannot reach them.

Avoid repeated or prolonged contact of insecticide with the skin. Avoid inhalation of insecticide dusts or mists. When handling insecticide, wear clean, dry clothing; wash hands and face before eating or smoking. When handling concentrates, avoid spilling them on the skin, and keep them out of the eyes, nose, and mouth. If any is spilled on skin or clothing, wash it off the skin and change clothing immediately. If it gets in the eyes, flush them with plenty of water for 15 minutes and get medical attention.

To prevent killing honey bees and other pollinators when it is necessary to treat alfalfa while it is in bloom, make insecticide applications when the bees are not visiting the plants. Avoid drifts of insecticide into bee yards and to adjacent crops in bloom. Notify beekeepers at least 48 hours before spraying large acreages, so measures can be taken to protect the bees.

To protect fish and wildlife, do not contaminate lakes, streams, or

The mention of commercial products in this publication does not constitute an endorsement by the U.S. Department of Agriculture over other products not mentioned.

ponds with insecticide. Do not clean spraying equipment or dump excess spray material near such water.

Avoid drift of insecticide sprays to nearby crops or livestock.

Phosdrin is extremely poisonous and may be fatal if swallowed, inhaled or absorbed through the skin. It should be applied only by a person who is thoroughly familiar with its hazards and who will assume full responsibility for its safe use and comply with all precautions on the container label. Wear a respirator tested and found satisfactory by the U.S. Department of Agriculture for protection against Phosdrin. A list of acceptable respiratory protective devices may be obtained from the Entomology Research Division, Agricultural Research Service, Beltsville, Md.

Do not apply Dylox more than once per cutting. Do not feed alfalfa treated with one of the following insecticides until the specified number of days after application: Dylox, 14 days; methoxychlor, 7 days; or Phosdrin, 1 day.

CALIFORNIA HAS SUPERVISED CONTROL PROGRAMS

California has a system of supervised control programs under which a grower or group of growers employs an entomologist to examine an area periodically and determine if and when an insecticide should be applied. This system provides good control because it eliminates unnecessary treatments, assures proper timing of treatments, and lessens the danger of destroying natural enemies that may be present.

●

Prepared by
Entomology Research Division
Agricultural Research Service

Washington, D.C. Revised May 1963

GPO : 1963 O—675232

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 5 cents